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The rapid progression of technology has significantly impacted population growth, urbanization, and industrialization in modern society. These developments, while positive on the surface, have created critical environmental problems in recent years. The Handbook of Research on Inventive Bioremediation Techniques is a comprehensive reference source for the latest scholarly information on optimizing bioremediation technologies and methods to control pollution and enhance sustainability and conservation initiatives for the environment. Highlighting pivotal research perspectives on topics such as biodegradation, microbial tools, and green technology, this publication is ideally designed for academics, professionals, graduate students, and practitioners interested in emerging techniques for environmental decontamination. Deals with numerical methods that have been employed to simulate nonlinear water waves. This book covers important applications, such as overturning waves, breaking waves, waves generated by landslides, freak waves, solitary waves, tsunamis, sloshing waves, interaction of extreme waves with beaches, and interaction with fixed structures. Solutions to Coastal Disasters: Tsunamis 2008 contains 24 papers presented at the conference held from April 13-16, 2008 in Turtle Bay, Oahu, Hawaii. The papers discuss the most current research on tsunamis, including planning and preparedness, field/experimental studies and building design, numerical modeling, tsunami deposits, risk assessment and mitigation. This proceedings will be essential to engineers, managers, planners, scientists, geologists, economists, oceanographers, and meteorologists working in the coastal zone. The papers from this conference have been published by ASCE in two separate books; the other collection is titled Solutions to Coastal Disasters 2008. Organized nanoassemblies of inorganic nanoparticles and organic molecules are building blocks of nanodevices, whether they are designed to perform molecular level computing, sense the environment or improve the catalytic properties of a material. The key to creation of these hybrid nanostructures lies in understanding the chemistry at a fundamental level. This book serves as a reference book for researchers by providing fundamental understanding of many nanoscopic materials. Fluid mechanics embraces engineering, science, and medicine. This book's logical organization begins with an introductory chapter summarizing the history of fluid mechanics and then moves on to the essential mathematics and physics needed to understand and work in fluid mechanics. Analytical treatments are based on the Navier-Stokes equations. The book also fully addresses the numerical and experimental methods applied to flows. This text is specifically written to meet the needs of students in engineering and science. Overall, readers get a sound introduction to fluid mechanics. A textbook that offers a unified treatment of the applications of hydrodynamics to marine problems. The applications of hydrodynamics to naval architecture and marine engineering expanded dramatically in the 1960s and 1970s. This classic textbook, originally published in 1977, filled the need for a single volume on the applications of hydrodynamics to marine problems. The book is solidly based on fundamentals, but it also guides the student to an understanding of engineering applications through its consideration of realistic configurations. The book takes a balanced approach between theory and empirics, providing the necessary theoretical background for an intelligent evaluation and application of empirical procedures. It also serves as an introduction to more specialized research methods. It unifies the seemingly diverse problems of marine hydrodynamics by examining them not as separate problems but as related applications of the general field of hydrodynamics. The book evolved from a first-year graduate course in MIT's Department of Ocean Engineering. A knowledge of advanced calculus is assumed. Students will find a previous introductory course in fluid dynamics helpful, but the book presents the necessary fundamentals in a self-contained manner. The 40th anniversary of this pioneering book offers a foreword by John Grue. Contents Model

Testing " The Motion of a Viscous Fluid " The Motion of an Ideal Fluid " Lifting Surfaces " Waves and Wave Effects " Hydrodynamics of Slender Bodies. "Discusses IoT in healthcare and how it enables interoperability, machine-to-machine communication, information exchange, and data movement. Covers how healthcare service delivery automates patient care with the help of mobility solutions, new technologies, and next-gen healthcare facilities with challenges faced and suggested solutions prescribed. This book presents the latest applications of IoT in healthcare along with challenges and solutions. It looks at a comparison of advanced technologies such as Deep Learning, Machine Learning, and AI and explores the ways they can be applied to sensed data to improve prediction and decision-making in smart health services. It focuses on society 5.0 technologies and illustrates how they can improve society and the transformation of IoT in healthcare facilities to support patient independence. Case studies are included for applications such as smart eyewear, smart jackets, and smart beds. The book will also go into detail on wearable technologies and how they can communicate patient information to doctors in medical emergencies. The target audiences for this edited volume is researchers, practitioners, students, as well as key stakeholders involved in and working on healthcare engineering solutions"-- Number Theory and its Applications is a textbook for students pursuing mathematics as major in undergraduate and postgraduate courses. Please note: Taylor & Francis does not sell or distribute the print book in India, Pakistan, Nepal, Bhutan, Bangladesh and Sri Lanka. Almost all books available on fracture mechanics cover the majority of topics presented in this book, and often much, much more. While great as references, this makes teaching from them more difficult because the materials are not typically presented in the order that most professors cover them in their lectures and more than half the information p Progress and Recent Trends in Microbial Fuel Cells provides an in-depth analysis of the fundamentals, working principles, applications and advancements (including commercialization aspects) made in the field of Microbial Fuel Cells research, with critical analyses and opinions from experts around the world. Microbial Fuel cell, as a potential alternative energy harnessing device, has been progressing steadily towards fruitful commercialization. Involvements of electrolyte membranes and catalysts have been two of the most critical factors toward achieving this progress. Added applications of MFCs in areas of bio-hydrogen production and wastewater treatment have made this technology extremely attractive and important. . Reviews and compares MFCs with other alternative energy harnessing devices, particularly in comparison to other fuel cells. Analyses developments of electrolyte membranes, electrodes, catalysts and biocatalysts as critical components of MFCs, responsible for their present and future progress. Includes commercial aspects of MFCs in terms of (i) generation of electricity, (ii) microbial electrolysis cell, (iii) microbial desalination cell, and (iv) wastewater and sludge treatment. The most teachable book on incompressible flow— now fully revised, updated, and expanded Incompressible Flow, Fourth Edition is the updated and revised edition of Ronald Panton's classic text. It continues a respected tradition of providing the most comprehensive coverage of the subject in an exceptionally clear, unified, and carefully paced introduction to advanced concepts in fluid mechanics. Beginning with basic principles, this Fourth Edition patiently develops the math and physics leading to major theories. Throughout, the book provides a unified presentation of physics, mathematics, and engineering applications, liberally supplemented with helpful exercises and example problems. Revised to reflect students' ready access to mathematical computer programs that have advanced features and are easy to use, Incompressible Flow, Fourth Edition includes: Several more exact solutions of the Navier-Stokes equations Classic-style Fortran programs for the Hiemenz flow, the Psi-Omega method for entrance flow, and the laminar boundary layer program, all revised into MATLAB A new discussion of the global vorticity boundary restriction A revised vorticity dynamics chapter with new examples, including the ring line vortex and the Fraenkel-Norbury vortex solutions A discussion of the different behaviors that occur in subsonic and supersonic steady flows Additional emphasis on composite asymptotic expansions Incompressible Flow, Fourth Edition is the ideal coursebook for classes in fluid dynamics offered in mechanical, aerospace, and chemical engineering programs. This book differs from other thermodynamics texts in its objective which is to provide engineers with the concepts, tools, and experience needed to solve practical real-world energy problems. The presentation integrates computer tools (e.g., EES) with thermodynamic concepts to allow engineering students and practising engineers to solve problems they would otherwise not be able to solve. The use of examples, solved and explained in detail, and supported with property diagrams that are drawn to scale, is ubiquitous in this textbook. The examples are not trivial, drill problems, but rather complex and timely real world problems that are of interest by themselves. As with the presentation, the solutions to these examples are complete and do not skip steps. Similarly the book includes numerous end of chapter problems, both typeset and online. Most of these problems are more detailed than those found in other thermodynamics textbooks. The supplements include complete solutions to all exercises, software downloads, and additional content on selected topics. These are available at the book web site www.cambridge.org/KleinandNellis. Introduction to Fluid Mechanics is a mathematically efficient introductory text for a basal course in mechanical engineering. More rigorous than existing texts in the field, it is also distinguished by the choice and order of subject matter, its careful derivation and explanation of the laws of fluid mechanics, and its attention to everyday examples of fluid flow and common engineering applications. Beginning with the simple and proceeding to the complex, the text introduces the principles of fluid mechanics in orderly steps. At each stage practical engineering problems are solved, principally in engineering systems such as dams, pumps, turbines, pipe flows, propellers, and jets, but with occasional illustrations from physiological and meteorological flows. The approach builds on the student's experience with everyday fluid mechanics, showing how the scientific principles permit a quantitative understanding of what is happening and provide a basis for designing engineering systems that achieve the desired objectives. Introduction to Fluid Mechanics differs from most engineering texts in several respects: The derivations of the fluid principles (especially the conservation of energy) are complete and correct, but concisely given through use of the theorems of vector calculus. This saves considerable time and enables the student to visualize the significance

of these principles. More attention than usual is given to unsteady flows and their importance in pipe flow and external flows. Finally, the examples and exercises illustrate real engineering situations, including physically realistic values of the problem variables. Many of these problems require calculation of numerical values, giving the student experience in judging the correctness of his or her numerical skills. This book provides an introductory-level exploration of geophysical fluid dynamics (GFD), the principles governing air and water flows on large terrestrial scales. Physical principles are illustrated with the aid of the simplest existing models, and the computer methods are shown in juxtaposition with the equations to which they apply. It explores contemporary topics of climate dynamics and equatorial dynamics, including the Greenhouse Effect, global warming, and the El Niño Southern Oscillation. Combines both physical and numerical aspects of geophysical fluid dynamics into a single affordable volume. Explores contemporary topics such as the Greenhouse Effect, global warming and the El Niño Southern Oscillation. Biographical and historical notes at the ends of chapters trace the intellectual development of the field. Recipient of the 2010 Wernaers Prize, awarded each year by the National Fund for Scientific Research of Belgium (FNR-FNRS). There are 2.4 billion people without improved sanitation and another 2.1 billion with inadequate sanitation (i.e. wastewater drains directly into surface waters), and despite improvements over the past decades, the unsafe management of fecal waste and wastewater continues to present a major risk to public health and the environment (UN, 2016). There is growing interest in low cost sanitation solutions which harness natural systems. However, it can be difficult for wastewater utility managers to understand under what conditions such nature-based solutions (NBS) might be applicable and how best to combine traditional infrastructure, for example an activated sludge treatment plant, with an NBS such as treatment wetlands. There is increasing scientific evidence that treatment systems with designs inspired by nature are highly efficient treatment technologies. The cost-effective design and implementation of ecosystems in wastewater treatment is something that exists and has the potential to be further promoted globally as both a sustainable and practical solution. This book serves as a compilation of technical references, case examples and guidance for applying nature-based solutions for treatment of domestic wastewater, and enables a wide variety of stakeholders to understand the design parameters, removal efficiencies, costs, co-benefits for both people and nature and trade-offs for consideration in their local context. Examples through case studies are from across the globe and provide practical insights into the variety of potentially applicable solutions. This book focuses on the recent advancements in the process parameters, research, and applications of electrospinning and electrospraying. The first chapter introduces the techniques and the effect of the parameters on the morphology of the nanofiber and nanoparticles and then the subsequent chapters focus on the applications of these techniques in different areas. This book will attract a broad audience including postgraduate students and industrial and academic investigators in sciences and engineering who wish to enhance their understanding of the emerging technologies and use this book as reference. The tragedy of the 2004 Indian Ocean tsunami has led to a rapid expansion in science directed at understanding tsunami and mitigating their hazard. A remarkable cross-section of this research was presented in the session: Tsunami Generation and Hazard, at the International Union of Geodesy and Geophysics XXIV General Assembly in Perugia, held in July of 2007. Over one hundred presentations were made at this session, spanning topics ranging from paleotsunami research, to nonlinear shallow-water theory, to tsunami hazard and risk assessment. A selection of this work, along with other contributions from leading tsunami scientists, is published in detail in the 28 papers of this special issue of Pure and Applied Geophysics: Tsunami Science Four Years After the Indian Ocean Tsunami. Part I of this issue includes 14 papers covering the state-of-the-art in tsunami modelling and hazard assessment. Another 14 papers are published in Part II focusing on observations and data analysis. "This book examines current, state-of-the-art research in the areas of data science, machine learning, data mining, optimization, artificial intelligence, statistics, and the interactions, linkages, and applications of knowledge-based business with information systems"-- Summary: This book presents necessary background knowledge on mechanics to understand and analyze elastic wave propagation in solids and fluids. This knowledge is necessary for elastic wave propagation modeling and for interpreting experimental data generated during ultrasonic nondestructive testing and evaluation (NDT&E). The book covers both linear and nonlinear analyses of ultrasonic NDT&E techniques. The materials presented here also include some exercise problems and solution manual. Therefore, this book can serve as a textbook or reference book for a graduate level course on elastic waves and/or ultrasonic nondestructive evaluation. It will be also useful for instructors who are interested in designing short courses on elastic wave propagation in solids or NDT&E. The materials covered in the first two chapters provide the fundamental knowledge on linear mechanics of deformable solids while Chapter 4 covers nonlinear mechanics. Thus, both linear and nonlinear ultrasonic techniques are covered here. Nonlinear ultrasonic techniques are becoming more popular in recent years for detecting very small defects and damages. However, this topic is hardly covered in currently available textbooks. Researchers mostly rely on published research papers and research monographs to learn about nonlinear ultrasonic techniques. Chapter 3 describes elastic wave propagation modeling techniques using DPSM. Chapter 5 is dedicated to an important and very active research field – acoustic source localization – that is essential for structural health monitoring and for localizing crack and other type of damage initiation regions. Features • Introduces Linear and Nonlinear ultrasonic techniques in a single book. • Commences with basic definitions of displacement, displacement gradient, traction and stress. • Provides step by step derivations of fundamental equations of mechanics as well as linear and nonlinear wave propagation analysis. • Discusses basic theory in addition to providing detailed NDE applications. • Provides extensive example and exercise problems along with an extensive solutions manual. This book looks at the major policy challenges facing developing Asia and how the region sustains rapid economic growth to reduce multidimensional poverty through socially inclusive and environmentally sustainable measures. Asia is facing many challenges arising from population growth, rapid urbanization, provision of services, climate change and the need to redress declining growth after the global financial crisis. This book examines poverty and

related issues and aims to advance the development of new tools and measurement of multidimensional poverty and poverty reduction policy analysis. The book covers a wide range of issues, including determinants and causes of poverty and its changes; consequences and impacts of poverty on human capital formation, growth and consumption; assessment of poverty strategies and policies; the role of government, NGOs and other institutions in poverty reduction; rural-urban migration and poverty; vulnerability to poverty; breakdown of poverty into chronic and transitory components; and a comparative study on poverty issues in Asia and other regions. The book will appeal to all those interested in economic development, resources, policies and economic welfare and growth. A concise introduction to atmosphere-ocean dynamics at the intermediate-advanced undergraduate level, taking the reader from basic dynamics to cutting-edge topics. Handbook of Green Engineering Technologies for Sustainable Smart Cities focuses on the complete exploration and presentation of green smart city applications, techniques, and architectural frameworks. It provides detailed coverage of urban sustainability spanning across various engineering disciplines. The book discusses and explores green engineering technologies for smart cities and covers various engineering disciplines and environmental science. It emphasizes techniques, application frameworks, tools, and case studies. All chapters play a part in the evolution of sustainable green smart cities and present how to solve environmental issues by applying modern industrial IoT solutions. This book will benefit researchers, smart city practitioners, academicians, university students, and policy makers. Introduction to heat and mass transfer for advanced undergraduate and graduate engineering students, used in classrooms for over 38 years and updated regularly. Topics include conduction, convection, radiation, and phase-change. 2019 edition. This book constitutes the proceedings of the 12th International Conference on Industrial and Engineering Applications of Artificial Intelligence and Expert Systems, IEA/AIE'99, held in Cairo, Egypt, in May/June 1999. The 91 revised papers presented together with three invited contributions were carefully reviewed and selected from more than 140 submissions. The book offers sections on fuzzy systems, neural networks, genetic algorithms, searching, reasoning, expert systems, case-based reasoning, intelligent agents, distributed artificial intelligence, pattern recognition and vision, machine learning, temporal reasoning, knowledge representation, planning and scheduling, tutoring and manufacturing systems, and intelligent software engineering. This book outlines the promise of the field of the Cognitive Internet of Things when it is applied to cognitive buildings. After an introduction, the authors discuss the goals of cognitive buildings such as operation in a more efficient, flexible, interactive, intuitive, and sustainable way. They go on to outline the benefits that these technologies promise to building owners, occupants, and their environments that range from reducing energy consumption and carbon footprint to promoting health, well-being, and productivity. The authors outline technologies that provide buildings and equipment with the ability to collect, aggregate, and analyze data and how this information can be collected by sensors and related to internal conditions and settings, energy consumption, user requests, and preferences to maintain comfort and save energy. This book is of interest to practitioners, researchers, students, and professors in IoT and smart cities. This book was first published in 1991. It considers the concepts and theories relating to mostly aqueous systems of activity coefficients. Through ten editions, Fox and McDonald's Introduction to Fluid Mechanics has helped students understand the physical concepts, basic principles, and analysis methods of fluid mechanics. This market-leading textbook provides a balanced, systematic approach to mastering critical concepts with the proven Fox-McDonald solution methodology. In-depth yet accessible chapters present governing equations, clearly state assumptions, and relate mathematical results to corresponding physical behavior. Emphasis is placed on the use of control volumes to support a practical, theoretically-inclusive problem-solving approach to the subject. Each comprehensive chapter includes numerous, easy-to-follow examples that illustrate good solution technique and explain challenging points. A broad range of carefully selected topics describe how to apply the governing equations to various problems, and explain physical concepts to enable students to model real-world fluid flow situations. Topics include flow measurement, dimensional analysis and similitude, flow in pipes, ducts, and open channels, fluid machinery, and more. To enhance student learning, the book incorporates numerous pedagogical features including chapter summaries and learning objectives, end-of-chapter problems, useful equations, and design and open-ended problems that encourage students to apply fluid mechanics principles to the design of devices and systems. Suitable for both a first or second course in fluid mechanics at the graduate or advanced undergraduate level, this book presents the study of how fluids behave and interact under various forces and in various applied situations - whether in the liquid or gaseous state or both. Long-awaited on the importance of halogen bonding in solution, demonstrating the specific advantages in various fields - from synthesis and catalysis to biochemistry and electrochemistry! Halogen bonding (XB) describes the interaction between an electron donor and the electrophilic region of a halogen atom. Its applicability for molecular recognition processes long remained unappreciated and has mostly been studied in solid state until recently. As most physiological processes and chemical reactions take place in solution, investigations in solutions are of highest relevance for its use in organic synthesis and catalysis, pharmaceutical chemistry and drug design, electrochemistry, as well as material synthesis. Halogen Bonding in Solution gives a concise overview of halogen bond interactions in solution. It discusses the history and electronic origin of halogen bonding and summarizes all relevant examples of its application in organocatalysis. It describes the use of molecular iodine in catalysis and industrial applications, as well as recent developments in anion transport and binding. Hot topic: Halogen bonding is an important interaction between molecules or within a molecule. The field has developed considerably in recent years, with numerous different approaches and applications having been published. Unique: There are several books on halogen bonding in solid state available, but this will be the first one focused on halogen bonding in solution. Multi-disciplinary: Summarizes the history and nature of halogen bonding in solution as well as applications in catalysis, anion recognition, biochemistry, and electrochemistry. Aimed at facilitating exciting future developments in the field, Halogen Bonding in Solution is a valuable source of information for researchers and professionals working in the field of

supramolecular chemistry, catalysis, biochemistry, drug design, and electrochemistry. This Special Issue covers symmetry and asymmetry phenomena occurring in real-life problems. We invited authors to submit their theoretical or experimental research presenting engineering and economic problem solution models dealing with the symmetry or asymmetry of different types of information. The issue gained interest in the research community and received many submissions. After rigorous scientific evaluation by editors and reviewers, nine papers were accepted and published. The authors proposed different solution models as integrated tools to find a balance between the components of sustainable global development, i.e., to find a symmetry axis concerning goals, risks, and constraints to cope with the complicated problems. We hope that a summary of the Special Issue as provided in this editorial will encourage a detailed analysis of the papers.

Retaining the features that made previous editions perennial favorites, *Fundamental Mechanics of Fluids, Third Edition* illustrates basic equations and strategies used to analyze fluid dynamics, mechanisms, and behavior, and offers solutions to fluid flow dilemmas encountered in common engineering applications. The new edition contains completely re This is the most comprehensive introductory graduate or advanced undergraduate text in fluid mechanics available. It builds from the fundamentals, often in a very general way, to widespread applications to technology and geophysics. In most areas, an understanding of this book can be followed up by specialized monographs and the research literature. The material added to this new edition will provide insights gathered over 45 years of studying fluid mechanics. Many of these insights, such as universal dimensionless similarity scaling for the laminar boundary layer equations, are available nowhere else. Likewise for the generalized vector field derivatives. Other material, such as the generalized stream function treatment, shows how stream functions may be used in three-dimensional flows. The CFD chapter enables computations of some simple flows and provides entrée to more advanced literature. *New and generalized treatment of similar laminar boundary layers. *Generalized treatment of streamfunctions for three-dimensional flow. *Generalized treatment of vector field derivatives. *Expanded coverage of gas dynamics. *New introduction to computational fluid dynamics. *New generalized treatment of boundary conditions in fluid mechanics. *Expanded treatment of viscous flow with more examples.

Silk is increasingly being used as a biomaterial for tissue engineering applications, as well as sutures, due to its unique mechanical and chemical properties. *Silk Biomaterials for Tissue Engineering and Regenerative Medicine* discusses the properties of silk that make it useful for medical purposes and its applications in this area. Part one introduces silk biomaterials, discussing their fundamentals and how they are processed, and considering different types of silk biomaterials. Part two focuses on the properties and behavior of silk biomaterials and the implications of this for their applications in biomedicine. These chapters focus on topics including biodegradation, bio-response to silk sericin, and capillary growth behavior in porous silk films. Finally, part three discusses the applications of silk biomaterials for tissue engineering, regenerative medicine, and biomedicine, with chapters on the use of silk biomaterials for vertebral, dental, dermal, and cardiac tissue engineering. *Silk Biomaterials for Tissue Engineering and Regenerative Medicine* is an important resource for materials and tissue engineering scientists, R&D departments in industry and academia, and academics with an interest in the fields of biomaterials and tissue engineering. Discusses the properties and applications of silk for medical purposes Considers pharmaceutical and cosmeceutical applications

The second edition of a bestselling textbook, *Using R for Introductory Statistics* guides students through the basics of R, helping them overcome the sometimes steep learning curve. The author does this by breaking the material down into small, task-oriented steps. The second edition maintains the features that made the first edition so popular, while updating data, examples, and changes to R in line with the current version. See What's New in the Second Edition: Increased emphasis on more idiomatic R provides a grounding in the functionality of base R. Discussions of the use of RStudio helps new R users avoid as many pitfalls as possible. Use of knitr package makes code easier to read and therefore easier to reason about. Additional information on computer-intensive approaches motivates the traditional approach. Updated examples and data make the information current and topical. The book has an accompanying package, *UsingR*, available from CRAN, R's repository of user-contributed packages. The package contains the data sets mentioned in the text (`data(package="UsingR")`), answers to selected problems (`answers()`), a few demonstrations (`demo()`), the errata (`errata()`), and sample code from the text. The topics of this text line up closely with traditional teaching progression; however, the book also highlights computer-intensive approaches to motivate the more traditional approach. The authors emphasize realistic data and examples and rely on visualization techniques to gather insight. They introduce statistics and R seamlessly, giving students the tools they need to use R and the information they need to navigate the sometimes complex world of statistical computing.

Gregory's Classical Mechanics is a major new textbook for undergraduates in mathematics and physics. It is a thorough, self-contained and highly readable account of a subject many students find difficult. The author's clear and systematic style promotes a good understanding of the subject: each concept is motivated and illustrated by worked examples, while problem sets provide plenty of practice for understanding and technique. Computer assisted problems, some suitable for projects, are also included. The book is structured to make learning the subject easy; there is a natural progression from core topics to more advanced ones and hard topics are treated with particular care. A theme of the book is the importance of conservation principles. These appear first in vectorial mechanics where they are proved and applied to problem solving. They reappear in analytical mechanics, where they are shown to be related to symmetries of the Lagrangian, culminating in Noether's theorem. Modern experimental developments in condensed matter and ultracold atom physics present formidable challenges to theorists. This book provides a pedagogical introduction to quantum field theory in many-particle physics, emphasizing the applicability of the formalism to concrete problems. This second edition contains two new chapters developing path integral approaches to classical and quantum nonequilibrium phenomena. Other chapters cover a range of topics, from the introduction of many-body techniques and functional integration, to renormalization group methods, the theory of response functions, and topology. Conceptual aspects and formal methodology are emphasized,

but the discussion focuses on practical experimental applications drawn largely from condensed matter physics and neighboring fields. Extended and challenging problems with fully worked solutions provide a bridge between formal manipulations and research-oriented thinking. Aimed at elevating graduate students to a level where they can engage in independent research, this book complements graduate level courses on many-particle theory. Dried fruits serve as important healthful snack items around the world. They provide a concentrated form of fresh fruits, prepared by different drying techniques. With their unique combination of taste/aroma, essential nutrients, fibre, and phytochemicals or bioactive compounds, dried fruits are convenient for healthy eating and can bridge the gap between recommended intake of fruits and actual consumption. Dried fruits are nutritionally equivalent to fresh fruits, in smaller serving sizes, in the current dietary recommendations of various countries. Scientific evidence suggests that individuals who regularly consume generous amounts of dried fruits have lower rates of cardiovascular disease, obesity, various types of cancer, type-2 diabetes, and other chronic diseases. Dried fruits also have the advantage of being easy to store and distribute, available around the year, readily incorporated into other foods and recipes, and present a healthy alternative to salty or sugary snacks. *Dried Fruits: Phytochemicals and Health Effects* is divided into three sections preceded by introductory chapters that provide an overview of dried fruits (their composition, phytochemicals and health applications) as well as the cancer chemopreventive effects of selected dried fruits (amla fruits or Indian gooseberries, avocados, berries, mangoes, mangosteens, persimmons, prunes, raisins, kiwi fruits, and other dried fruits). The first section covers the most popular dried berries (blackberries, blackcurrants, blueberries, cranberries, gojiberries, mulberries, raspberries, and strawberries); the second section discusses non-tropical dried fruits (apples, apricots, cherries, citrus fruits, figs, nectarines, peaches, pears, prunes, and raisins); and the final section addresses tropical dried fruits (açai fruits, bananas, dates, guavas, papayas, mangoes, passion fruits, and pineapples). Contributors to this volume are internationally renowned researchers who have provided a comprehensive account of the global perspectives of the issues relating to phytochemicals and health effects of dried fruits. The book will serve as a resource for those interested in the potential application of new developments in dried fruits' nutraceuticals and functional foods. Biochemists, chemists, food scientists/technologists, nutritionists, and health professionals, from academia, government laboratories, and industry will benefit from this publication. Although this book is intended primarily as a reference book, it also summarises the current state of knowledge in key research areas and contains ideas for future work. In addition, it provides easy to read text suitable for teaching senior undergraduate and post-graduate students. This textbook provides engineers with the capability, tools and confidence to solve real-world heat transfer problems.

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